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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/382,433	08/25/1999	JOHN G. STARK	2947.03US02	5227

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EXAMINER

RICHMAN, GLENN E

ART UNIT PAPER NUMBER

3764

22

DATE MAILED: 01/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/382,433

Applicant(s)

STARK ET AL.

Examiner

Glenn Richman

Art Unit

3764

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE ____ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 24,25,27,31,50 and 52-59 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 24,25,27,31,50 and 52-59 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____ 6) ☐ Other: ____

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. Claims 24,27,29-31, 50, 53, 56 and 59 are rejected under 35 U.S.C. 102(e) as being anticipated by Walton (5,989,157). Walton discloses in Figures 1, 13, 18, and 20-22 a method of performing coordination exercises for neuromotor training, the method comprising flexing a first joint (vertebrae joint about the waist or wrist) such that a cursor (e.g. 235) on a display (20) moves to reach a target position on the display (track) at a selected, predetermined time, the motion of the cursor being correlated with the motion or strain of the joint by way of a sensor (accelerometer) in an ambulatory orthosis (2-4) placed at the joint (e.g. Figs. 4-6; col. 5, l. 54-56, col. 6, l. 14-31, col. 8, l. 46-52, col. 11, l. 3-6 and 63-67 and col. 12, l. 1-12), the ambulatory orthosis *comprising a portable computer controller* (e.g. col. 13, lines 14-30), a support portion (2-4) that fits around the joint such that the ambulatory orthosis is carried by the patient during the flexing step, *the controller comprising a digital microprocessor* (e.g. col. 13, lines 14-30).

As for claim 27, Walton discloses a strain sensor (e.g. col. 13, lines 31-39),

As for claim 29, Walton discloses in column 6, lines 14-31, the step of flexing a second joint to simultaneously vary the display along with motion of the first joint, wherein variations in the display due to the motion of the second joint is determined by the output of a position or strain sensor (col. 13, lines 31-39) at the second joint.

As for claim 30, see the above discussion of claim 24 discussing how the sensors are operably connected to a portable controller comprising a digital microprocessor, the microprocessor providing a target for the flexing of the joints on the display.

As for claim 31, Walton discloses the sensor being selected from a strain sensor noted above and a position sensor col. 5, lines 37-42.

As for claim 50, Walton discloses in Figures 1, 4-6, 18, and 20-21 an ambulatory orthosis system comprising a display (20 in Fig. 1), a support portion (includes 2-4; col. 4, l. 52-58) that is capable of fitting around a joint (col. 4, l. 53 and col. 6, l. 21-24 states can be mounted on waist (vertebrae joints) or wrist and Figs. 4-6 shows unit on waist and wrist) and is carried by the patient during use and a sensor (includes accelerometers and strains gages; col. 4, l. 66-col. 5, l. 2) on the support portion (see Figs. 1-2 showing these sensors are part of unit 2), and a controller (includes 17 shown in Fig. 3 and described in col. 5, l. 19-62) operably connected (col. 5, l. 9-16) to the sensor, wherein the controller controls the display based on the signals from the sensor (such as that described in col. 5, l. 37-55) and wherein the patient, flexing the joint, causes a cursor movement on the display, in which the motion of the cursor is correlated with the motion or strain of the joint as detected by the sensor in the ambulatory orthosis system support (col. 5, l. 54-56, col. 6, l. 14-31, col. 8, l. 46-52, col. 11, l. 3-6 and 63-67 and col. 12, l. 1-12) when the ambulatory orthosis support is associated with the joint of the patient.

As for claim 53, Walton discloses in Figure 15 and column 10, lines 40-42 that the display can be part of a television (198).

As for claim 56, Figures 13 and 21 of Walton provides examples of the display having targets (target 136 and the track 230) to be reached by the patient through the joint movement. See column 8, lines 46-52 and column 12, lines 1-12.

As for claim 59 as broadly as recited, the support portion includes a hinge (buckle (5)) and thus the orthosis comprises a hinge.

2. Claims 24,25 and 51-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stark (5,823,975) in view of Walton. Stark discloses in Figures 1-2, 9, and 14, column 7, lines 36-58, column 8, lines 10-60, and column 15, lines 1-39 a method of performing coordination exercises for neuromotor training comprising flexing a joint (col. 5, l 17-22; Figs. 1 and 14) of a patient such that a sine or square waveform moves to reach a target position (that of the prescribed regiment) on the display (col. 15, l. 33) at a selected, predetermined time, the motion of the waveform being correlated with the motion or strain of the joint (Figs. 1 and 14) by way of the sensor (col. 5, l. 34-51, col. 7, l. 40-43, and col. 15, l. 32-39 discuss strain gages 114,115 and position sensor 131) in an ambulatory orthosis placed at the joint, the ambulatory orthosis comprising a support portion that fits around the joint (e.g. Figs. 1 and 14) such that the ambulatory orthosis is carried by the patient during the flexing step (see Figs. 1 and 14). However, the sine or square waveform may not be considered a cursor on a display. As such, Walton is being cited to teach an alternative display format for sensor

information in a cursor format to reach a target position. Walton teaches various formats for presenting sensor information, including a waveform such as that in Fig. 18 (col. 11, l. 3-13), a projectile (134) to a target (136) as that in Fig. 13 (col. 8, l. 46-52) and cursor in the form of a cartoon character in Figure 21 (col. 12, l. 1-12). Thus, Walton suggests other displayable formats for displaying sensor information, including in a specific discussion of a cursor format, which provides excitement, entertainment and incentive to a physical regiment (col. 2, l. 65-col. 3, l. 1 and col. 12, l. 8-12). Thus, one having ordinary skill in the art would have been motivated to substitute a cursor, as taught by Walton, for a waveform of Stark in order to provide the user with more excitement, entertainment and incentive during a physical regiment.

3. Stark further discloses in column 8, line 61 - column 9, line 21 and Figure 9 that the sensor (strain gages 114, 115) is operably connected to a portable controller (116) comprising a digital microprocessor (164).

As for claim 25, see Figures 1, 9 and 14 of Stark, disclosing a first support portion (e.g. 103,110) that fits around a first body portion on a first side of a joint, a second support portion (e.g. 101,112) that fits around a second body portion on the opposite side of the joint from the first body portion, a flexible connection (hinge 117) connecting the first and second support portions, and a position sensor (131;col. 7, l. 40-49) operably connected to the flexible connection such that the position sensor detects the relative orientation of the first support portions with respect to the second support portions.

As for claim 50, see the above discussion of claim 24. Stark discloses in Figures 1-2, 9, and 14, column 7, lines 36-58, column 8, lines 10-60, and column 15, lines 1-39 an ambulatory orthosis system (figs. 1 and 14 shown ambulatory) comprising a display (e.g. 176 or 336), a support portion that fits around a joint (col. 5, l. 17-22) and is carried by the patient during use (see figs. 1 and 14), a controller (116) operably connected to a sensor (e.g. strain gages 114, 115; col. 8, l. 20-39), wherein the controller controls the display based on signals from the sensors (such as torque load; col. 15, l. 32-39) and wherein the patient, flexing a joint, causes a sine or square waveform movement on the display, in which the motion of the waveform is correlated with the strain of the joint as detected by the sensor (col. 15, l. 32-39) in an ambulatory orthosis system when the ambulatory orthosis system is associated with the of the patient. See the teaching regarding the cursor with respect to Walton above and claim 24.

4. Claims 54-55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Walton. The size of the unit 2 (especially the embodiment shown in Fig. 6) of Walton is such that is sized and configured to fit around the knee or elbow. In addition, Walton suggests in column 3, lines 4-6 and column 4, lines 52-53 that the unit can be placed on other parts of the body (see "arms, and/or legs" in column 3 and "waist, wrist, etc." in column 4) in order to provide exercise and physical simulation to various parts of the body (col. 2, l. 65 - col. 3, l. 6). Thus, one having ordinary skill in the art would have been motivated to place the unit such that it fits around the knee or elbow in order to provide exercise and physical simulation to various parts of the body.

2. Claims 27, 31 and 57-58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Walton in view of Kramer (6,059,506). In the alternative if the flex sensors of Zimmerman are not viewed as strain sensors, Kramer teaches in column 23, lines 16-26 that it is known to use strain flex sensors in order to measure the position of the fingers and hand in order to provide feedback to the user. Thus, Kramer teaches a motivation to select a strain flex sensor for the flex sensors (40) of the Zimmerman device in order to provide feedback to the controller regarding the motion of the user's hand and fingers.

As for claims 31 and 57, see the above discussion.

2. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Walton in view of Pitkanen

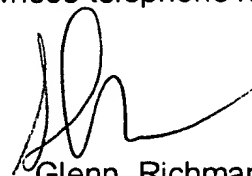
The Pitkanen device, which is used to display body motion during exercise, teaches a displayed cross-hair motion in two dimensions (Figs. 5A-C) correlated with the strain and position of the joint by way of position and strain sensors (column 4, lines 23-55). While Pitkanen does not disclose the particulars of the first and second dimensions corresponding to the output of which sensor, such a correspondence would reduce and simplify processing of the sensor data. Absent a teaching as to the criticality of such an arrangement, one having ordinary skill in the art would have known to display the cursor such that the cursor moves in a first dimension corresponding to the position sensor and in a second dimension corresponding to the strain gage in order to reduce and simplify the processing of the data from the sensors.

Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Glenn Richman whose telephone number is 703 308 3170. The examiner can normally be reached on Mon-Thurs.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nicholas Lucchesi can be reached on (703) 308-2698. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9302.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1148.



Glenn Richman
Primary Examiner
Art Unit 3764